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FAA AVIATION NEWS

JULY 1966

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COVER

These Aero **Jet Commanders** typify the new generation of business aircraft. See page 6 for an insight on how businessmen have joined the jet set.

FAA AVIATION NEWS

FEDERAL AVIATION AGENCY VOL. 5, NO. 3

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William F. McKee, *Administrator*
David D. Thomas, *Deputy Administrator*

Charles G. Warnick, *Director*, Office of Information Services;
Donald R. Foxvog, *Editor*; Abner B. Cohen, *Art Director*

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Take a Vacation from Accidents

Accidents never take a vacation, but they can spoil yours if you invite them along. You are in charge of your safety, plus the safety of those who fly with you.

In the good old summertime a pilot can have more fun than anyone. Flying provides an added dimension of pleasure that earthbound people can only vaguely imagine. Not only is flying fun in itself, it allows the general aviation pilot and his family or friends to go places that are often beyond the reach of others.

But with all the fun ahead, a note of caution is in order. The truth is that for some vacations will end in disaster—and more often than not, the disaster could be avoided.

Unfortunately, there will be newspaper accounts of such incidents all summer.

Perhaps the greatest danger associated almost exclusively with flying is weather. Time after time accident reports show that a pilot attempted to fly through weather he was not equipped to handle. ("Thunderstorms," June issue of *FAA Aviation News*). Often the pilot neglects to get an adequate weather briefing. Many times he is in too much of a hurry to get to his destination—say his favorite vacation spot (back cover). When his vacation draws to a close, he may overstay his visit and feel he just must get back home that night so he can be on the job the next day. Sometimes he makes it; sometimes he doesn't.

In addition to the dangers associated with flying, many other hazards have a direct effect on a pilot when he is at the controls of an aircraft.

Fatigue. After months of limiting his physical activity to nothing more energetic than pushing a pencil across a page, or hurrying for the bus, one should not try to catch up on his yearly quota of exercise in one day—or even during a two-week vacation. The muscles need to be toned up before being subjected to violent exercise.

The body requires at least six to eight hours of sleep out of every 24 normal hours, and additional activity demands extra hours of sleep to prevent an accumulation of fatigue. Fatigue impairs mental activity and pilots should not attempt to fly when they are tired.

Heart attacks. One of the favorite targets for complications that may result from overexertion is the heart. Increased activity increases the demands for blood. The heart must beat faster and with more force; this in turn increases its own demands for blood. When the supply cannot keep up with the demand, the stage is set for a heart attack. If a pilot has chest pains, he should not fly. There are many stories about pilots who pass out while in the air. Some have a happy ending; others do not. (The saving factor in a story reported in

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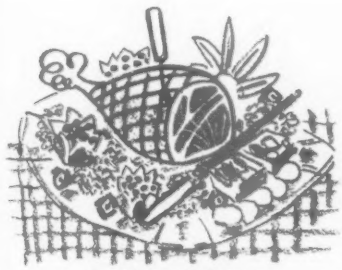
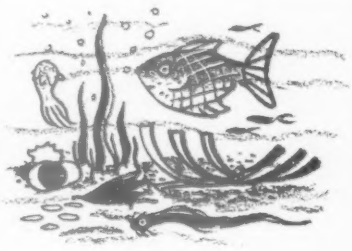
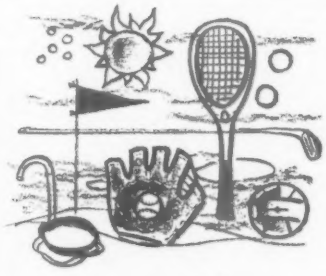


Avoid overindulgence



. . . polluted water



. . . overexertion

. . . poison plants, insects

the May *FAA Aviation News* was the fact that one passenger was a pilot who, though he had not flown in 15 years, was able to bring the plane to a safe landing.)

Sunburn. The American public has come to equate a tanned complexion with good health, but an overzealous pursuit of a "healthy tan" can lead to severe illness. Individual tolerances to the sun's rays vary markedly but, to be safe, the initial daily exposure should be limited to 10 minutes. Subsequent daily exposure may be increased by three minutes each day, unless adverse reactions develop to previous exposures. (Suntan lotions and various types of other sun "screens" help considerably.) This advice may not be welcomed by vacationing pilots who plan to spend days on sun-drenched beaches, but they must consider the alternatives.

Often there is severe pain, and poisons produced by the burned tissue may enter the blood stream. A pilot whose system is upset by this "sunpoisoning" would be foolhardy to take to the air.

Food poisoning. Frequently pilots will visit vacation sites that lack facilities for the proper preservation of food. Bacteria multiply with amazing speed when the temperature and moisture conditions are favorable—for them. Without refrigeration, meats, seafoods, salads and desserts can become highly toxic within a few hours. Sometimes, the taste of the food is not sufficiently affected to alert the person who eats it.

Polluted Water. The seasoned traveler is well aware of the problems that untreated—or even unusual—water can cause. In areas where sanitation standards are lax, severe gastrointestinal upsets are quite common. Questionable water sources should be considered unsafe unless proved otherwise. Sometimes local residents seem to thrive on a water supply that has an embarrassing effect on visitors. Boiling is an effective method of purifying water.

Allergies and sensitivities. Many vacation spots have a multitude of plants, insects and marine life that cause severe reactions on some people. Common examples include poison ivy, poison sumac, poison oak, bees, wasps, ants and jelly fish. While itching irritations and swellings develop in the average individual, others may suffer severe allergic shock and even death. Certainly no pilot suffering a severe reaction from this type of poisoning will be at peak efficiency when called upon to make a critical landing.

Pollen allergies such as hay fever that cause eye irritations are common where blooming vegetation is encountered. Sometimes this type of vegetation can trigger an asthmatic attack.

Overindulgence in rich food or alcoholic beverages. For many, having a good time includes dining and wining. The unusual, rich and sometimes exotic foods one may eat on a vacation may upset the system. An excess of even the best foods can produce gastrointestinal upset.

Those who overdo in the grocery department are certainly matched—or overmatched—by those who are familiar with the offerings of the local bar. A hot sun provides a fine excuse to indulge in cooling drinks. The disaster that can result from an extra beer or from liquid refreshment in a cool cocktail lounge should be self-evident. Under Federal Aviation Regulations, a pilot may not fly while under the influence of intoxicating liquors. Under a proposed FAR change, a person will not be allowed to pilot an aircraft within eight hours after drinking any alcoholoic beverage. As the medics point out, alcohol not only has an adverse affect on the gastrointestinal tract, but disturbs the central nervous sysem as well. They say these effects may last for days. Again, discretion and good judgment are advised.

Scuba diving. For some, no vacation is complete without a couple of days of scuba diving. Scuba divers usually consult their decompression tables to prevent bends from developing when surfacing from deep water. These tables are calculated to bring the diver up to sea level safely. But trouble can occur if a scuba diver pilot ascends to altitude too soon. It is wise to wait at least 12 hours before flying if a pilot has been diving below 60 feet of water. A 24-hour wait should be observed after diving to greater depths, or remaining under 60 feet for prolonged periods of time.

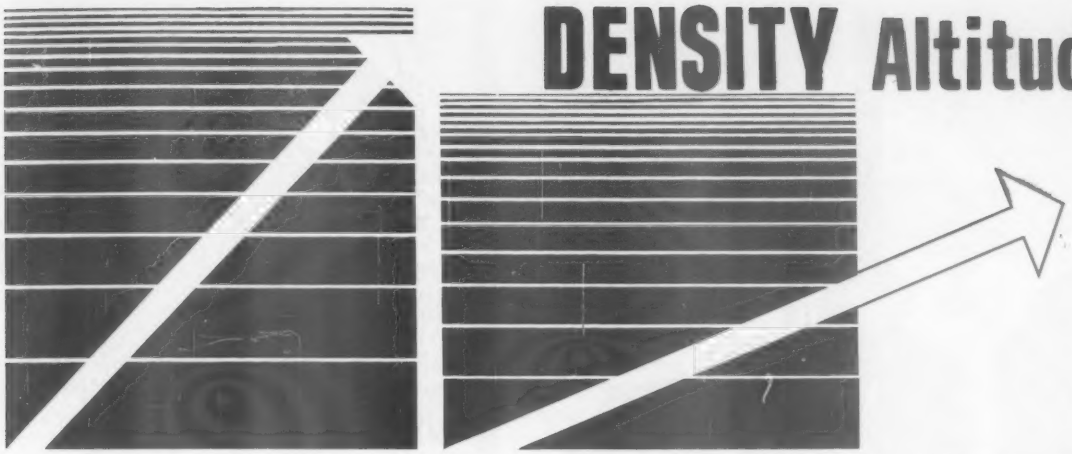
Medication. Some well-equipped vacationers are armed with a variety of medications to combat the adverse conditions they may encounter. Some are readily available; others may be obtained only on prescription. Dexedrene, tranquillizers, antihistamine, penicillin, sulfa drugs, streptomycin and other antibiotics are among the more common drugs that can give a pilot serious problems. Side effects include drowsiness, allergies, nausea, heart palpitations, dizziness, deafness, headaches, blurred vision, confusion and jitters. Doctors say some sensitive people can get side effects from any drugs, including aspirin.

Some medications produce peculiar effects which increase a person's sensitivity to sun, alcohol or the effects of hypoxia. Also, they affect each other and the total physiologic result is much greater than one would expect each to produce.

The Federal Aviation Regulations prohibit a person from piloting an aircraft while using any drug that affects his faculties in a way that compromises safety.

Accidents. Many an ambitious vacationer returns with a hand swathed in bandages or with an arm in a sling. Again, the FARs seek to protect a pilot against himself by prohibiting him from operating an aircraft if he has a known disqualifying physical deficiency.

Summertime has always been funtime. Let's keep it that way in the aviation community.



DENSITY Altitude

When it comes to a good old-fashioned hangar flying session, one subject almost never discussed is density altitude. One reason may be that many pilots don't know enough about it. However, because of the inescapable influence that density altitude has on aircraft and engine performance, it is to every pilot's advantage to understand the subject.

The basic principle is that an aircraft engine performs better in dense air, because the engine produces more power and the wings produce more lift than they do in thin air.

Two important factors affect air density. They are:

(1) *Altitude.* The higher the altitude, the less dense the air.

(2) *Temperature.* The warmer the air, the less dense it is.

A third factor, *humidity,* is of less significance and is not considered in density altitude computations. However, an increase in humidity decreases the air density.

In computing density altitude, pressure altitude—which is read when the altimeter is set at 29.92 inches—is corrected for temperature. If the temperature is standard, i.e., 59 degrees Fahrenheit (or 15 degrees Centigrade) for sea level, the density altitude will be the same as the pressure altitude. If the temperature is higher, the density altitude will be higher, because the air will be less dense. If the temperature is lower, the density altitude will be lower, because the air is more dense.

From the pilot's point of view, an increase in density altitude results in:

- A longer takeoff run
- A slower rate of climb
- A faster approach and landing
- A longer landing roll

In some areas, Alaska for example, pilots are generally well aware of the temperature effects of density altitude. In the winter time, at sea level, when the temperature is 50 degrees below zero, the density altitude is approximately 8,100 feet below sea level; in the summer time, at 90 degrees, the density altitude at the same elevation is approximately 2,100 feet, or a density altitude difference of 10,200 feet. The difference in performance is quite noticeable.

At airports of higher elevation, such as those in western United States, high temperatures sometimes have such an effect on density altitude that safe operations are impossible. Generally, this happens between midmorning and midafternoon and if the airplane is carrying a heavy load, the situation becomes even more hazardous. Operations, therefore, should be scheduled during the cool of the morning or evening.

The effects of density altitude on performance can be computed on the FAA-developed Denalt performance computer (*FAA Aviation News* March 1966) which is sold by the Superintendent of Documents, GPO, Washington, D.C. 20402, for 50 cents. (Orders should indicate whether the computer is for a fixed pitch propeller or a variable pitch propeller.)

The dangers of density altitude are related in story form in an FAA film by the same name which is now being shown to pilot groups by FAA general aviation district offices.

The movie traces the flight of a photographic team from a sea level airport in Louisiana to a choice fishing spot high in the Sierra Nevadas—and the problems that result from density altitude.

Currently, the FAA representative that shows the film makes Denalt computers available free to pilots in the audience.

The 29-minute color movie is also available free from the FAA Film Library, P.O. Box 25082, Oklahoma City, Okla. 73125.

1 On location filming the FAA movie **Density Altitude.** **2** Meet Beech **Bonanza,** star of the show.

Photos: Flagg Films

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JET JOCKEYS IN GREY FLANNEL SUITS

Hard-headed American business chieftains are buying executive jets as fast as the makers can put these swift, sleek beauties together—at an all-time high this year, according to the National Business Aircraft Association, which keeps close tabs on aircraft sales.

Federal Aviation Agency figures for 1965 show 245 pure jets in the general aviation fleet, plus an additional 320 turboprops. The greatest number of executive jets appeared on the scene within the past two years; the majority of these in the past year. And still the market cries for more. Makers are confident they can sell all they can assemble.

The beginning of the switch to turbine aircraft for corporate business is generally logged as Sept. 27, 1961, when Superior Oil of Houston put its brand on Lockheed *JetStar* N500Z, which is still flying for the company. Superior retained its unique position for only one day—until Continental Oil, a neighbor, acquired its own *JetStar*, N540G, flagship of its fleet.

What had been almost the exclusive realm of the military pilot was now open territory for the executive pilot. The movers and shakers of commerce were quick to grasp the time-compressing potential of the jet. Moreover, operating experience has proved that jets get greater utilization than the conventional piston planes in business fleets. Businessmen were not slow to discover that over-all utilization of the jet plane increases the "stage length"—the average length of the average trip. What once was an all-day trip in a prop plane is now a round-trip flight of only a few hours. Trips that might have been postponed for "a day when we have more time" are now being made because the jets have created a new measure of time.

Currently, four American, one British and one French aircraft firms rule the roost in producing business jets. They are Lockheed, with its *JetStar;* North American's *Sabreliner;* Lear's *Models 23* and *24*, and Aero Commander's *Jet Commander*. The British entry is the de Havilland *DH-125* and France contributes the *Fan Jet Falcon*, made by Dassault. About to enter the field is Germany's HFB-320 *Hansa*, a plane which features a novel forward-sweep wing. Later, the Italian Piaggio-Douglas PD-808 will be marketed in the U.S.

The average delivered price of a jet in the above category is about $1 million, with accessories including radio, electronic navaids, instrumentation and custom interiors. The cost of the basic plane varies with the maker. The *Jet Commander*, a four- to nine-passenger, two-crew member, midwing jet sells for $595,000. The *Sabreliner* costs $825,000 in its basic configuration and the *JetStar* carries a price tab of $1,492,000, but this includes autopilot and wiring for optional electronics. Lear's *Model 24* costs $649,000 with all electronics and custom interior.

As swift and plush as the "small" executive jets are, human nature provides a constant prod for something just a bit bigger, as befits a captain of industry and his entourage. After all, the business jet is an airborne extension of the executive suite and the conference room. By piston engine standards, the above jets have no walkabout space, let alone room to spread business papers, plans, presentations and the other paraphernalia of commerce.

Waiting to fill this gap is the Douglas DC-9, so far the largest—maximum gross weight 90,000 pounds—and most expensive —$3.4 million, fully equipped. Also, in this category is British Aircraft's BAC 111, which comes in two weights—the "light" one has a gross weight of 78,500 pounds and the other is a 87,000 pounder. The price is about $3 million. These planes have walkabout space as well as nonstop coast-to-coast range.

The men who fly the executive jets are in the front rank of professional pilots, with some commanding salaries of $25,000 a year. The average is in the plus $15,000 category. While this is less than the salary of some airline captains, who earn as much as $34,000 a year, the executive pilot has certain advantages usually associated with top management including stock options.

Who pilots the corporation jets? For the most part, the "old line" company pilots—many former military pilots — who have been upgraded to meet the new demands imposed by the jet age in business flying. By a natural process of evolution these men grew along with the technology. Understandably, the qualifications are high. All executive pilots have commercial and instrument ratings and the Class 2 physical required by the Federal Aviation Agency. In addition, according to the National Business Aircraft Association, the overwhelming number have airline transportation tickets and Class I physicals. They also engage in semi-annual proficiency training, ground school and flight checks. That they are truly an elite corps of professional flyers is amply demonstrated by their outstanding safety record. Professionalism is the word that describes this group.

The present "crew" of pilots sitting up front in air transports, and in the executive planes, came mainly from the military. The inevitable aging process is bringing this supply to an end. Contributing to the loss of this source is the military service's trend toward ballistic missiles.

Where the "new" pilots are to come from is a brow-wrinkling question that has the industry in a quandary. The full answer isn't in yet, but it seems clear that executive flying will increase.

This business of business flying has hardly gotten off the ground.

1 This de Havilland **DH-125** is typical of the new executive jets entering the business flying inventory. **2** Aero **Jet Commander** is the newest in a famous line. **3** North American **Sabreliner** was an early entry in the business jet field. **4** Lockheed **JetStar** is generally believed by aviation historians to be the first pure jet in business aviation.

Flying Men and Their **Magnificent Machines**

Although the number of general aviation aircraft and pilots has continued to climb steadily over the years, the number of accidents in which mechanical failure was cited as a contributing cause has dropped drastically.

Federal Aviation Agency officials underscore the significance of this trend by pointing to the rapidly increasing complexity of general aviation aircraft. Planes have steadily become bigger, faster, more powerful, higher flying and safer. And the general aviation flyer is buying them in greater numbers.

According to preliminary FAA figures, 1,735 aircraft in the four-place or more category (200 h.p., or more) joined the general aviation fleet in 1965. This compares with only 742 aircraft having 100 h.p. or less. Turbine aircraft, both jet and turboprop, climbed from 306 to 416 in 1965. General aviation is moving into the realm of sophisticated aircraft as fast as manufacturers can speed the planes down the assembly line.

Still, the "mechanical" accident rate is declining. Why? FAA Flight Standards officials point to several factors—better aircraft and aircraft maintenance, as well as pilots who are keenly aware of the need for the proper care and feeding of their flying machines.

Nevertheless, accidents where mechanical or maintenance sins of omission or commission were cited as contributing factors do happen.

Bogus parts and jury-rigged "fixes" continue to turn up in accident investigations. Following one forced landing caused by an in-flight power failure due to fuel starvation, investigators discovered an automotive fuel tank filler cap had been substituted for the proper type. When a fuel flow test was conducted, the flow of fuel at the firewall diminished in approximately 60 seconds.

In another case of engine failure in flight, a post mortem of the power plant disclosed a nonstandard gasket beneath the generator cover on the rear of the engine. This gasket did not completely cover the perimeter of the oil pump drive gear boss, thereby permitting oil to escape from the engine. Ironically, a factory-manufactured gasket had been purchased and was to be installed at a future date.

A piece of leather forced into the role of a wheel master cylinder gasket finally gave up the masquerade after some 47 hours and dumped a plane on its

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1 Specialist guides prop to bench for inspection. 2 Look into wheelwell for signs of chafing, other signs of wear. 3 The right tool for the job is the sign of a good mechanic, a lesson pilot-owners should learn early. 4 Special fixture speeds job, adds to safety.

back during a landing rollout. Examination showed the Lock-O-Seal O-ring was missing and the piece of leather substituted. Result: One damaged aircraft.

A senile part caused major damage to a plane shortly after takeoff when the engine quit completely after a brief period of rough running. Investigation disclosed that the rubber shock absorber located between the left magneto drive and impulse coupling had rotted away and failed. The aircraft records indicated the engine and both magnetos had been overhauled more than 11 years previously and, since overhaul, had operated about 420 hours. Rope is not ordinarily considered suitable for aircraft repairs, but people do try it, with dismal results. Such a case turned up in snow country. On landing, a ski dug into the snow and the landing gear collapsed, causing extensive damage to the plane. A ski assembly bungee cord had broken on the previous landing and a piece of rope was used to hold the ski tip up. On takeoff, the rope became untied.

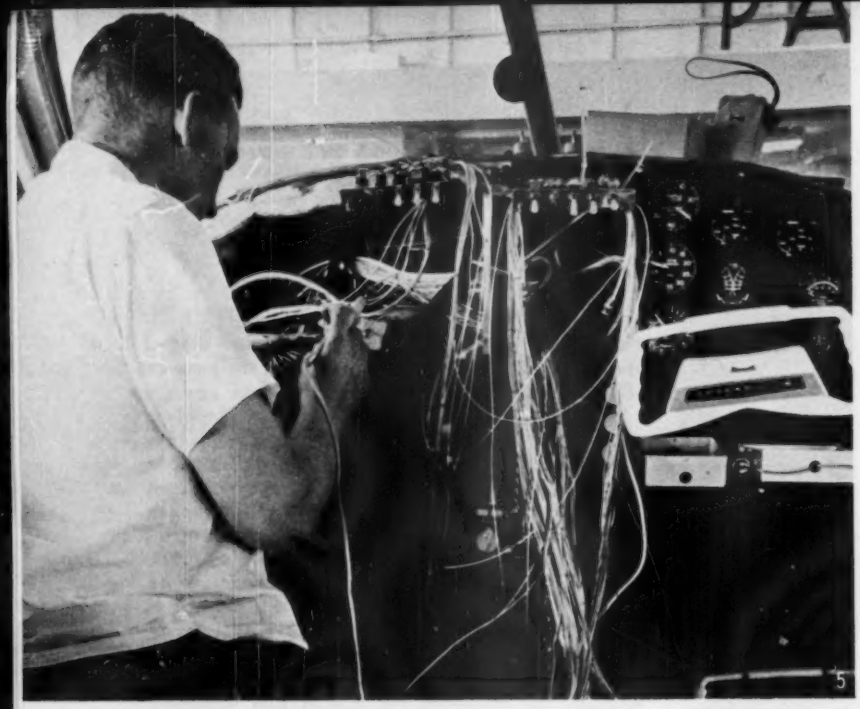
Murphy's Law (which makes the proposition that if something *can* be put together wrong, it *will* be put together wrong) prevailed in another instance where one of aviation's oldest goofs brought a new, recently modified plane to grief. The first attempt to test fly the plane after it had been reworked to make it suitable for dispensing chemicals disclosed a tendency to veer sharply to the left just before it became airborne. Cause: The ailerons had been hooked up backward when the wings were reinstalled during modification!

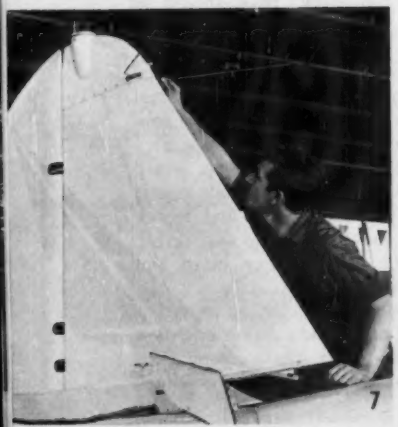
While FAA-required inspections and most categories of maintenance must be done by or under the supervision of licensed mechanics, the FARs permit a considerable amount of *preventive* maintenance by the owner-pilot. Many pilots resist the urge to "do-it-yourself" under the mistaken notion that the FAA precludes such excursions. Not so, as a look in Part 43, "Maintenance, Preventive Maintenance, Rebuilding and Alteration," will reveal. However, it is obvious that the "do-it-yourselfer" pilot should be competent.

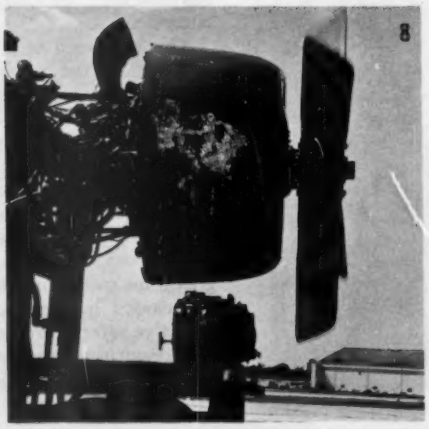
The key word is *preventive* maintenance. Under this part of the regulation, a pilot-owner can perform 25 specific preventive maintenance chores that will not only assure him that his aircraft is in top-flight shape, but will result in considerable savings.

The pilot-owner, for example, can remove, instali and repair **landing gear tires.** He can replace elastic **shock absorber cords** on the landing gear and he can service the **landing gear shock struts** by adding oil, air or both. In the same area, he can clean and grease his own **wheel bearings.**

Included in the "do-it-yourself" list is replacing defective **safety wire and cotter pins,** and **lubrication not requiring disassembly** other than removal of nonstructural items such as cover plates, cowlings







5 Wiring, **6** instrument and radio repairs, **7** antenna adjustments should be left to the experts. **8** Engine with test club mounted is ready for checkout. FARs permit pilot-owners to do only certain types of repairs.

and fairings. He can make simple **fabric patches** not requiring rib stitching or removal of structural parts or control surfaces.

Replenishing fluid in the **hydraulic reservoir** is permitted. And so is **refinishing the decorative coating** of fuselage, wings, tail group surfaces (excluding balanced control surfaces), fairings, cowlings, landing gear and cabin or cockpit interior when removal or disassembly of any primary structure or operating system is not required.

Pilots can also **apply preservative** or protective material to components where no disassembly of any primary structure or operating system is involved and where such coating is not prohibited or contrary to good practice.

The FAA has nothing against the pilot-owner making **repairs to upholstery** and decorative furnishing of the cabin or cockpit interior, providing he uses approved materials and doesn't take apart any primary structure or interfere with an operating system. The same goes for making **simple repairs to fairings,** nonstructural cover plates, cowlings and small patches and reinforcements not changing the contour so as to interfere with proper airflow.

Side windows can be replaced, just so the work does not interfere with the structure or any operating system such as controls, electrical equipment, etc. **Safety belts** can be replaced; so can seats and seat parts. However, the seats and parts must be of a type approved for the aircraft and the work must not require disassembly of any primary structure or operating system.

Sanctioned is trouble shooting and repairing broken circuits in **landing light wiring circuits.** The same goes for replacing **bulbs, reflectors and lenses** of position and landing lights.

Where no weight and balance problem is involved, pilot-owners are free to replace **wheels and skis.** Replacing any **cowling** not requiring removal of the propeller or disconnection of flight controls is permitted by FARs, as is replacing or cleaning **spark plugs** and setting the spark plug gap clearance. There are no restrictions on replacing **hose connections** (except hydraulic connections) or prefabricated fuel lines, cleaning fuel and oil **strainers,** replacing **batteries** and checking fluid level and specific gravity.

"Do-it-yourselfers" can even take their aircraft apart—provided it is a glider with wings and tail surfaces specifically designed for quick removal and installation.

From this it can be seen that there is a broad range of things an owner can do to his own aircraft, just so long as he does not get into the "works"—the engine itself, control surfaces and components upon which he is most dependent upon professional mechanics for safe operation.

Coast to Coast – WESTWARD

In the early morning of Oct. 5, 1922, Lts. John A. Macready and Oakley G. Kelly took off from San Diego's Rockwell Field on a planned nonstop flight across the United States. They landed 35 hours, 18½ minutes later—but not at New York, which was their destination. Unable to get their heavily loaded airplane through the fog-shrouded mountain passes of southern California, they contented themselves with setting an unofficial world's record for endurance flight and then landed back at Rockwell Field.

A month later, the two young Army Air Service officers tried again in the same airplane—a single-engine Fokker monoplane designated the T-2. Lieutenant Macready has written his impressions of that flight:

"On our second attempt we circled around, used up some gasoline, and got over the (southern California) mountains. Then it was a question of wandering around the United States. We had to go clear down to Texas; we couldn't go straight ahead and get over the (Rocky) mountains. As each gallon of gasoline was consumed, we'd get a little more elevation, but the mountains were going up faster than we were. So we'd go down, follow the low places. Then, after we got where we could get across—oh, that was the worst trip! — it stormed and rained at night. There was a tornado —people killed on the ground.

"We were dodging this lightning and stuff, getting between it and the storms. Then, as we got toward Indianapolis, the engine wasn't going too good. We knew we couldn't make New York. We had a cracked cylinder, so Kelly poured coffee and soup into the radiator because you have to keep the engine cooled when the water is leaking out. We landed on the parade ground at an Army post at Indianapolis."

After this experience, Macready and Kelly decided their next attempt to fly nonstop across the United States should be made from east to west. This would enable them to approach the Rockies with a relatively light fuel load and virtually assure a successful crossing.

On May 2, 1923, they were ready to try again—this time from historic Roosevelt Field on Long Island. Both men were confident of success since only two weeks before they had set a new official world's record for endurance flight in the T-2 by staying aloft for 36 hours, 4½ minutes.

Takeoff from Roosevelt in the heavily loaded T-2 was to prove a problem, however. There were trees and electric wires at one end of the field and a 20-foot drop off at the other.

The first takeoff run was aborted about two-thirds of the way down the mile-long runway when it became apparent that the aircraft could not clear the obstructions at the northeast end of the field. The T-2 then was turned around for a run in the opposite direction. Lieutenant Macready who was seated in the cabin behind the open cockpit, described the event:

". . . The big monoplane bounced and bounced but did not rise. It was still on the ground when we came to the 20-foot drop off from Roosevelt to Hazlehurst Field. . . . I wondered whether we would go over the ledge and settle down to the ground. Over we went and settled down, but not quite to earth. The T-2 was flying, but without any apparent climb."

The next few minutes were tension-filled as the T-2 skimmed across open fields, dodging trees and other obstructions. Then slowly it began gaining altitude. Passing over Coney Island, it was 300 to 400 feet above the ground and climbing.

Kelly flew as pilot until the aircraft reached Richmond, Ind., at about 6 p.m. (CST). Here, he and Macready switched places—each man in turn squeezing through the narrow triangular opening which connected the forward cockpit and the rear cabin. The aircraft was flown by controls in the rear cabin while the exchange took place.

For five and one-half hours, they flew in conditions of solid overcast and light rain. Then, shortly after 11:30 p.m. (CST), they broke out into bright moonlight. They were now about 1,180 miles along their route. At midnight, they reached the 1,200 mile mark and again changed pilot positions.

Dawn found them over Tucumcari, N.M., on course and on schedule. Two hours later, with Macready again at the controls, they passed over the Rio Grande. Nine hours of fuel remained in the tanks. San Diego lay 620 miles ahead, approximately seven hours flying time at their established ground speed of 94 miles per hour.

They crossed the Continental Divide at mid-morning and again changed pilot positions. They were now flying at 10,200 feet, the highest point along their route.

As they approached San Diego shortly after noon (PST), Macready, who was to have the honor of landing the airplane, took the controls. He had this to say about the end of the flight:

"Then we were over the Tehachapis and then down over San Diego. We had the impression nobody was interested. Then we came gliding toward North Island, and we came pretty close over the U.S. Grant Hotel. We saw a bunch of people on top of the hotel waving sheets and so forth. We went on and landed at Rockwell Field, and, of course, we were pretty tired when we got there."

This first nonstop flight across the continent had taken 26 hours, 50 minutes, 38 seconds. Today, modern jetliners do it in five. By 1975, America's supersonic transport will do it in two.

By John Leyden

Photo credit: The Smithsonian Institution

Both John A. Macready, left, and Oakley G. Kelly later retired from the Air Force with the rank of Colonel. Macready, now in his late 70s, is living in Merced, Calif. Kelly died last month in El Cajon, Calif., at the age of 74.

AIRPORT BEAUTIFICATION IS HIGH PRIORITY TARGET FOR WOMEN FLYERS

Dr. Dora Dougherty

Heads Women's Group

Dr. Dora Dougherty, chief of the human factors group of Bell Helicopter Co., Fort Worth, Texas, has been named chairman of the FAA's Women's Advisory Commitee on Aviation. She succeeds Mrs. Philip A. Hart, whose term expired. A noted psychologist, pilot and educator, Dr. Dougherty recently was appointed to the National Safety Council's General Aviation Safety Committee.

Mrs. Betty Miller, Santa Monica, Calif., was named vice chairman.

A nationwide airport beautification program led by FAA's Women's Advisory Committee on Aviation was announced last month, following the group's three-day meeting in Washington.

The new project is a major recommendation of the group and was originally suggested by the FAA administrator as a way of carrying out the First Lady's beautification program.

In a recent letter addressed to Mrs. Janey B. Hart, former committee chairman and wife of the senior senator from Michigan, Mrs. Johnson commented:

"What an appropriate place the airport is for communities to emphasize in their beautification programs, since it inevitably makes a first and vivid impression on arriving guests!

"It is my hope that civic officials, garden clubs, youth groups and service organizations will work with you and give airport beautification a high priority in their improvement programs in the weeks and months ahead."

The Women's Advisory Committee on Aviation is composed of 32 outstanding American women pilots and was formed in 1964 to make recommendations to the FAA administrator for improving aviation facilities and services.

The airport beautification program officially began in Seattle during the June convention of the Ninety-Nines, an international organization of women pilots, which is providing liaison among the communities in which individual members live, the airports and the FAA, through the Women's Advisory Committtee. The Ninety-Nines and other organizations promoting airport beautification will work in liaison at local levels with FAA's area offices which are located throughout the U.S. at major hubs of aviation activity.

Although airport beautification does not qualify for Federal-aid Airport Program funds administered by the FAA, communities with comprehensive beautification programs may be eligible to apply for Federal grant-in-aid assistance under aid programs administered by the Departments of Interior and of Housing and Urban Development.

In addition to airport beautification, the advisory committee recommended the start of a civilian airman training program similar to the Civilian Pilot Training Program of pre-World War II, upgrading of flight instructor and instrument flight training, and airport lighting research.

Inquiries regarding the airport beautification program should be addressed to the Women's Advisory Committee on Aviation, FAA, General Aviation Affairs, Washington, D.C. 20553.

FAA, WEATHERMEN TEAM UP IN EL PASO TO GIVE 'ONE STOP' SERVICE

The El Paso, Texas, Flight Service Station is typical of a handful of offices that have combined their pilot briefing functions with a U.S. Weather Bureau Airport Station (WBAS).

Pilots in El Paso, Birmingham, Kansas City, Indianapolis, Las Vegas and other places find one-stop service a real convenience. One typical flight instructor, A. E. Buchanan, said that he never visited either the El Paso Flight Service Station or WBAS until they were combined in the present new convenient location. "I now bring my students here regularly to show them everything," he said.

FAA personnel in all FSSs are trained in basic meteorology and are certified by the Weather Bureau as weather briefers for pilots. They are trained to interpret weather information to fit the needs of pilots.

In complicated weather situations, Weather Bureau personnel provide special assistance.

Flight service specialist Pedro Tellez, with glasses, briefs student pilot Bryan Shaw on weather trends as flight instructor A. E. Buchanan looks on in the combined FAA-Weather Bureau office in El Paso, Texas. In the background, a second flight service specialist, R. J. Schmidt, briefs a pilot who called in to ask about weather.

NATIONAL MAINTENANCE AND OPERATIONS MEETING DRAWS RECORD CROWD

FAA Administrator William F. McKee, right, and A. M. Bertolet, president, Reading Aviation Service, Inc. Right, general view of display area.

The 17th Reading National Maintenance and Operations Meeting last month was described by officials of the Reading (Pa.) Municipal Airport Authority as "the most successful of all."

Among the record 50,000 attending was FAA Administrator William F. McKee and a number of aides, including two associate administrators, Joseph D. Blatt (development), and Arvin O. Basnight (programs), and Robert V. Reynolds, assistant administrator for general aviation.

During the three-day meet the control tower handled more than 6,000 operations. A normal day at the airport rarely exceeds 250 operations.

In all, 110 exhibitors displayed their wares and more than 1,000 plane owners and pilots attended technical sessions that covered all phases of flying.

General Aviation Carries 39.4 Million Travelers; Airlines 84.6 Million

General aviation airplanes carried an estimated 39.4 million travelers in 1965, according to a new report released last month by the Federal Aviation Agency. The airlines carried some 84.6 million passengers.

The FAA estimates of general aviation travelers were based on information gathered by all of the Agency's flight service station facilities during August 1965. Each facility submitted load factor information from pilots filing itinerant flight plans. Local flights, generally conducted for practice or sightseeing, which took off and landed at the same airport, were not counted.

General aviation pilots, filing 208,916 flight plans with FAA during the survey month, carried 651,950 people in 1,220,079 available seats for an average of 3.1 per flight. Occupants of single-engine one- to three-place piston-powered airplanes averaged 74 per cent of capacity as compared to turbo-prop airplanes which averaged 34 per cent.

During the survey, single-engine piston-powered airplanes, which comprise 87.7 per cent of the 86,788 aircraft in the general aviation fleet, filed 67.5 per cent of the flight plans; multi-engine aircraft, 11.9 per cent of the fleet, filed 29.1 per cent; and turbine-aircraft, 0.4 per cent of the fleet, filed 3.4 per cent.

Free copies of the *FAA Staff Study—General Aviation Occupant Load Factor* may be obtained at all FAA Flight Service Stations and General Aviation District Offices or by writing to the Federal Aviation Agency, Air Traffic Service Executive Staff, 800 Independence Ave., S.W., Washington, D.C. 20553.

General Aviation Seen as Transportation Solution

The contribution being made by general aviation to the solution of the expanding transportation problem was highlighted recently by Robert V. Reynolds, FAA's assistant administrator for general aviation affairs, when he addressed the Aviation-Space Writers Association's annual gathering.

Giving special attention to scheduled air taxi operators, he pointed out that a few years ago they did not even exist. On Jan. 1, 1964, there were 12, and this January the total was 78. "I genuinely believe," he said, "that within the next two-year period we shall see this number double."

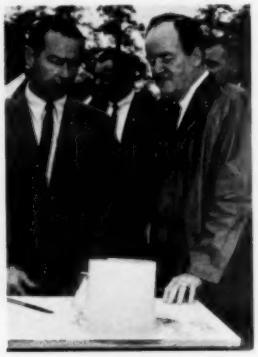
Reynolds pointed out that scheduled air carriers use only 555 of the 9,500 reported airports in the U.S. and the traveler who needs air service beyond these 555 points looks to general aviation.

Last year, the 292 airports with towers handled 37.9 million aircraft operations of which 26.6 million were general aviation aircraft.

Of 24.2 million itinerant operations (flights from or to another airport), Reynolds said, 14.7 million were generated by general aviation. (Almost 8 million were generated by air carrier and the balance involved military operations.)

"The most significant factor of these general aviation itinerant flights," Reynolds said, "is the number of people involved"—nearly 40 million last year; almost half of the total passengers transported by the air carrier fleet.

BRIEFS



• AIRMINDED VICE PRESIDENT Humphrey recently toured the FAA's National Aviation Facilities Experimental Center, Atlantic City, where he was given a thorough briefing. Here, NAFEC official Edwin Shoop shows him a pound of jellied fuel used to demonstrate its effectiveness in reducing fire hazards in aircraft accidents. The Vice President, who has traveled close to 300,000 miles by air since assuming office, said, "The work you are doing here makes me feel safer, better and happier."

• CLEAR AIR TURBULENCE will be probed in a new study by of all things, a sailplane. Sponsored by the Explorers Club of New York, the project will be financed by one of its members, Capt. Kimball Scribner of Pan American Airways has volunteered to fly the craft to seek out vertical air currents up to 10 miles and higher.

• FAA PUBLICATIONS AVAILABLE from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, include, "Student Pilot Guide" (Revised), AC 61-12A, 15 cents; "Airport Activity Statistics of Certificated Route Air Carriers as of June 30, 1965," $2; "Airline Transport Pilot Examination Guide," (AC 61-18A), 35 cents; "Federal Aviation Agency, 7th Annual Report," 45 cents.

• A NEW HISTORIC FACT BOOK tracing the Federal Government's role in the development of civil aviation is now available for $1 from the Superintendent of Documents (address below). The 130-page reference book (which carries the full name, "Federal Aviation Agency Historical Fact Book, A Chronology, 1926-1963") singles out historical milestones which mark the path to this nation's present position of world leadership in aviation.

• NOW AVAILABLE is "Policy Planning for Aeronautical Research and Development," a staff report prepared under the direction of Sen. Clinton P. Anderson, chairman of the Senate Committee on Aeronautical and Space Sciences. Replete with photos, statistics and text, the study was prepared within two different frameworks: First, the scientific and engineering state of the art from which improvements in aircraft and related systems will come; second, the public purposes and private sector market opportunities or demands which will be served by these advanced operational systems. Copies may be ordered for $1 each from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Single-Place Gyroplane Ticket Doesn't Need Inspector Aloft

Private pilot flight tests for single-place gyroplanes may now be conducted by Agency inspectors who observe the test from the ground.

An inspector will advise the applicant of the procedures and maneuvers he would like to have demonstrated. Practically all basic techniques may be required, but the inspector may exclude entry and recovery from a high rate of descent and 720 degree turns from a point.

Inasmuch as cross country flights are impossible to observe from the ground, if the inspector considers it necessary he may observe the examinee's cross country competency from another aircraft. Or the inspector may allow the examinee to fly another type of aircraft, instead of the rotorcraft used in the basic flight test, so the inspector can accompany him in the aircraft.

An applicant who satisfactorily demonstrates his competency will be issued a private pilot certificate with a rotorcraft/gyroplane rating, limited to solo flight.

This procedure is authorized by Part 61 of the Federal Aviation Regulations, Section 61.5(c), which requires that the applicant meet all other requirements for the pilot certificate sought.

Most of FAA's 300 FS Stations Will be Site for Written Exams

To improve its service to the public, the FAA has announced that written examinations for airman certificates and ratings will be offered at most of the Agency's 300 flight service stations.

Airman certification rules also have been amended to permit applicants to take written examinations without having to show required experience. While the requirement of having to show qualifying experience before taking the written test has been eased under the new rules, it remains in effect for applicants taking oral, practical or flight tests.

The new rules affect applicants for certificates and ratings for airline transport pilot (airplanes and rotorcraft), flight engineer, flight navigator, mechanic, air traffic control tower operator (junior rating), aircraft dispatcher and senior and master parachute rigger.

Air carrier and general aviation district offices also will continue to give the written tests for the various certificates or ratings.

FORUM

FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. No anonymous letters will be used, but names will be withheld on request.

• See the U.S.A.—In a Balloon

I am writing to secure necessary information for a proposed expedition which a friend and I intend to make in a balloon. A balloon company is now in the process of drawing up the blue prints for us.

I have four specific questions:

1—What regulations does the FAA have in regard to balloons, especially in case of a transcontinental flight such as ours?

2—Would we need a two-way radio if we fly during daylight hours only?

3—Will the standard altitude assignments in regard to magnetic course apply?

4—Can we submit a list of proposed check points with the possibility of making alterations if necessary?

Coos Bay, Ore.

As to question 1, FAR Part 91, "General Operating and Flight Rules," applies to the operation of free balloons, as well as to other aircraft, whether on short hops or on transcontinental flights. Also, FAR Part 61 contains the certificate requirements for pilots of free balloons, and FAR Parts 21 and 31 contain the airworthiness standards and procedures for free balloons.

Although generally *a two-way radio is not required for VFR flights during daylight hours, there is no short answer to question 2. You should refer to FAR Part 91 to know when and where the radios* are *required for VFR flights.*

In answer to question 3, yes, standard altitude assignments over 3,000 feet do apply, depending on your magnetic course. This information is in FAR Section 91.109, "VFR Cruising Altitude of Flight."

Question 4—Yes, you may file a flight plan and make alterations. FAR Section 91.83 lists the information a flight plan must contain.

We strongly advise you to contact an FAA general aviation district office to get detailed information concerning your proposed flight. FAA specialists will review the appropriate regulations with you. The nearest GADO to Coos Bay is 5410 N.E. Marine Drive, Portland, Ore. 97218.

• Girl Scout Wants to Know

I am trying to earn my Cadette Girl Scout badge in aviation. One of the requirements is to know who promotes civil aviation, how they do it, how a person gets a private pilot's license, and the age at which a person can solo a glider and an airplane. Do many women fly airplanes?

Bensenville, Ill.

The FAA promotes civil aviation in many ways, including films, publications, meetings and individual contacts with the public. The FAA regulates and controls civil aviation activities to promote their growth and development and to protect those who fly, as well as the general public. While various state aeronautics commissions promote civil aviation in similar ways, their activities are, of course, limited to state boundaries.

To get a private pilot certificate, an eligible person must have 40 hours of experience, including certain solo and cross country flying, and certain instruction. Also, applicants must pass both a written and a flight test. Anyone who operates an aircraft in solo flight must hold at least a student pilot certificate. The minimum age for student pilots is 14 for gliders, and 16 for other aircraft.

A large number of women are actively engaged in civil aviation. Statistics for 1964 show that women hold 6,755 student, 4,000 private, 813 commercial and 51 airline transport pilot certificates.

For example, Mrs. Walter H. White, below, holds an airline transport pilot rating. She and her husband, right, each have logged a couple of thousand flight hours. Mrs. White, with approximately 3,000 hours, holds a slight edge.

We wish you every success in earning your Cadette Girl Scout badge in aviation.

• List of Certificated Schools

I am interested in aviation as a career. Can you please send me a list of schools where I can get my commercial license and an instrument rating? I also would appreciate a list of the airlines.

APO Seattle

The latest issue of AC No. 140-2B, "List of Certificated Pilot Flight and Ground Schools," has been mailed to you. Available without charge from FAA, HQ-438, Washington, D.C. 20553, this Advisory Circular lists names and addresses of primary, commercial, instrument and flight instructor flying schools for airplanes, as well as helicopter and glider flying schools, and basic and advanced ground schools. Although the FAA does not supply airline lists, we have asked the Air Transport Association of America (1000 Connecticut Ave., N.W., Washington, D.C. 20036) to send a list directly to you.

• Plans to Study for Commercial

In the letters section of *FAA Aviation News* you mentioned a set of *IFR Exam-O-Grams.* Is it possible to order these examination guides? I plan to take my commercial written exam early this summer and my IFR written later in the summer.

Independence, Mo.

Single copies of the Agency's 16 Instrument Exam-O-Grams *are available to pilots without charge from the FAA Aeronautical Center, AC-740, P.O. Box 25082, Oklahoma City, Okla. 73125. A set has been sent to you. We also recommend AC 61-28,* Commercial Pilot Examination Guide, *which may be purchased for 75 cents from the Superintendent of Documents, GPO, Washington, D. C. 20402.*

• Line Omitted in the FARs

While investigating possible flight schools in my area, I have encountered a disagreement on requirements for a commercial pilot applicant taking training under an approved school curriculum.

The main issue in question is: Under an approved school, how many hours of instrument training by what type of rated instructor is required of an applicant?

Los Angeles

The point is covered in Appendix B, paragraph (b), "Phase II," of Part 141 of the Federal Aviation Regulations titled "Basic Instrument Instruction." The first sentence of subparagraph (b)(5), "Basic Instrument Flying," should *read:*

> The specified 10 hours of instrument training shall be given *in an airplane in flight. At least five hours shall be given* by a rated instrument flight instructor; the remaining five hours may be given by the holder of a flight instructor certificate with an airplane rating.

FAR Part 141 is based in part on former Civil Aeronautics Manual 50. A correction to Part 141 is being issued to add the emphasized words that were inadvertently omitted in the original publication of Appendix B of the FAR. No substantive change was intended from the CAM material.

• Sold on Solar Still

I read with great interest your article on the solar still. I recall reading some years ago in a book about the famous explorer, Dr. David Livingstone, that a Kalahari Desert bushman saved his life by getting water from a "sip well." It was described as being a hole scooped out of the sand, with a gourd shell in the bottom. A reed was used to sip up the water collected from the animal membrane covering. The simple solar still you described should be a part of any survival kit.

Commander I. L. McNally, USN
Wayland, Mass.

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